

**Forest Management Plan
Stewardship Incentive Program
for the
Town of Bucksport
Years 2011 -2021**

October, 2011

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(Joachim "Jake" Maier)

The Steward

*I walk through the forest in wonderment
Of the beauty and life that abides:
In the boughs of the trees,
And the depths of the leaves,
Where the shyest of wildlife hides.
My steps fall silent on the forest floor
As I pause to appreciate nature's store,
Of renewable resource so rich and pure
Which I have the privilege to use and care for.
For those whose steps will follow mine
On this forest path one day:
I'll manage the resource to ensure
This beautiful legacy will endure,
And someone will know I passed this way.*

Brenda Wilkins

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Introduction

This management plan was prepared in accordance with the guidelines of the Maine Forest Service Stewardship Incentive Program. Several parts make up this plan:

- A summary of key elements of the plan and the inventory following this introduction.
- Goals and objectives of the owner for managing the land. All recommendations are linked to these objectives and cover the next 10 years of management.
- Information about location and history of the land, listings of forested and non-forested acreage, descriptions of terrain and soils, evaluation of access to the land, observations of endangered or threatened species, insect and disease conditions, forest health considerations, and conditions of boundary lines
- Detailed descriptions of delineated stands and recommendations for the management of different aspects of the land, including estimates of basic stand parameters.

Appendices include:

- A glossary of technical terms.
- Information about wildlife and biodiversity issues.
- Information about soils found on the land.
- Information about legal restrictions and obligations, which might apply under certain circumstances.
- Other forestry related information.

Updating, changing, and adding to this management plan is highly encouraged. Planning and observation maps are provided in the appendix, to mark observations and ideas.

Forest management plans are conveniently done every 10 years, and for many years, the forest service tries to cost-shared management plans at 10-year intervals. Please call your Representatives and Senators to lobby for continued funding of forest stewardship related programs.

Forests deliver essential and mostly free services for the wellbeing of society by providing clear water and clean air, an aesthetically pleasing environment, and habitat for wildlife and game species. Society should help to pay for these services through cost-share programs.



Many trails and signs invite visitors to the Bucksport Forest

Essentials

This management plan describes the two Bucksport Town Forests at Silver Lake having 76 (eastern parcel) and 78 (western parcel) acres respectively.

Town of Bucksport
P.O. Box X, 50 Main Street
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The land is located on Silver Lake in Bucksport, Maine. One parcel is accessible through the Town Garage on Central Street, the other parcel is just north of the public landing on Silver Lake Road in Bucksport, Maine, Hancock County



3-D representation of parcels with orange borders and surrounding area

It is identified as Lot 9 (western parcel) and Lot 15 (eastern parcel).

Landowner Objectives

Eastern Parcel Behind Town Garage

- Continue to develop and maintain the species forest for educational purposes.
- Continue to maintain the walking trail along the shore of Silver Lake as a remote and rustic trail and continue to develop sitting areas along the trail that provide panoramic views of Silver Lake.
- Continue to maintain and improve the interior trails to be easily accessible for walkers, snowshoeing and cross country skiing and small recreational vehicles.
- Continue to maintain a canoe and kayak ramp at the southwest corner of the property.
- Consider relocating the gate on the westerly side of the access road so that the area can be more accessible by vehicle.
- Continue to maintain the field and consider plantings that will create a feeding area for wildlife.
- Consider designating several areas for educational purposes including the identification of the different forest vegetation located in the designated areas.
- Consider developing several campsites that are available by canoe or kayak on the west shore of the peninsula.
- Identify areas on the property where timber harvest can occur.
- Consider forest management practices in areas that will improve the quality of timber
- Consider establishing areas that should not be harvested but be maintained to support wildlife.
- Consider banning hunting from the area
- Consider a plan to protect well established apple trees on the property.

Western Parcel off Silver Lake Road.

- Continue to develop and improve the boat landing including the new parking areas, kayak and canoe launching area and picnic area.
- Establish a trail system on the property that supports walkers and operator of small recreational vehicles.
- Consider a plan to protect well established apple trees on the property
- Consider developing a walking trail that extends along the shore of Silver Lake and begins at the new proposed kayak and canoe launch area.
- Consider protecting the wet land area located at the northwest corner of the property.
- Identify areas on the property where timber harvest can occur.
- Consider forest management practices in areas that will improve the quality of timber.
- Consider developing the area across the boat landing for sledding and tobogganing.
- Trim back growth and mow on an annual basis the field area where the old homestead was once located.
- Develop a camping area across from the boat landing.
- Develop a firewood harvest operation if demand for cut yourself is developing.



Recreation is an important objective on the property. It is reflected in the many trails on the parcels.

Acreage of Land Use / Cover Types

Topic	Acreage ¹	Description
Forestland (productive)	122	Forested land with existing tree cover with at least 10% stocking, capable of producing commercial timber products (≥ 20 ft ³ / acre / year), and that is not/will not be developed or maintained for a non-forest land use.
Reserved forest-land (productive)	0	Forestland which the landowner intends to withhold permanently from timber harvesting, or land which is permanently reserved from timber harvest due to legal constraints. Required if property is enrolled in the Maine Tree Growth Tax Program.
Non-commercial/Unproductive Forestland	0	Forestland that is incapable of producing 20 ft ³ of wood per acre and year due to persistent natural conditions.
Non-forested area	0	Areas without existing tree cover, or land with trees maintained for another use (e.g. residential, fields, heath, barren, etc.)
Water bodies	0	Area of lakes or ponds contained by the property
Wetlands	10	Area of non-forested wetlands (bog, swamp, marsh)
Developed land	4	Land developed for residential, commercial, or associated uses.
Agricultural land	18	Cropland, hayfields, pasture, orchard, blueberries
Total	154	

Proposed Activities (Summary, Timetable)

This plan concentrates on the management of the property during the next 10 years. After 10 years or when major changes occur, the plan should be revised.

- 2011 — 2021 Thin all areas for both properties except the forever wild section in the western parcel.
- 2012 Start the thinning operation on the western parcel to create a demonstration area. Once the thinning details have been established, observed and approved, proceed to the eastern parcel and thin and it cleanup. (See management section for details)
- 2012 Coordinate the thinning with the creation of walking paths and trails for recreational vehicles in the western parcel.
- 2012 Reinvest funds generated from thinning operations (when the wood is marketable) to carryout the goals outlined by the Forest Management Plan for both the western and eastern parcels.
- 2012 Establish a plan for all trails on the western parcel prior to carrying out any thinning operation.
- 2011 Consult with the local Rod and Gun Club and Snowmobile Club prior to laying out the trails in the western parcel for recreational vehicles.
- 2011 — 2021 Cut the vegetation in each field located on

Long-term Objectives

Long term objectives for the property are to convert the forested part of both parcels to an, multiple use forest where aesthetically pleasing recreation and wildlife management have high priority, and where stumpage income from periodic thinning can make the management self-sufficient. Some form of un-even aged structure with old-growth characteristics is the desired long-term goal for the forest. The un-even aged structure should be achieved through a combination of individual tree and group selection thinning. The groups should be up to ¼ acre in size.

The fields on both properties should remain meadows but should exhibit native flowering bushes displaying colorful leaves or flowers from spring

¹ Acreage is only approximately. This was not a boundary line survey.

- each parcel annually or at least as often as necessary to eliminate the reestablishment of trees and shrubs.
- 2012 Plant flowering shrubs at the edges of both fields located on each parcel.
- 2011 — 2012 Establish cleared areas on the eastern parcel to be used as remote campsites.
- 2011 Recognize the campsite located on the western parcel.
- 2012 Locate environmentally designed and innovative privies to support all campsites.
- 2012 Work with the area Boy Scout troops and other similar groups to build and install wood duck houses.
- 2011 — 2013 Locate, release and prune all apple trees.
- 2012 Establish more benches on the shore trail.
- 2012 Contract the services of a qualified botanist to conduct a plant inventory for both sites.
- 2011 Obtain the necessary permits to cut the trees and brush and remove the rock berm in order to reestablish the "old sledding slope" located on the western parcel.
- 2012 — Relocate the gate on the eastern parcel beyond the canoe/kayak access road (Red Trail) in order to allow parking in the parking area located uphill from the Red Trail.
- 2012 — 2021 Make available low grade hardwoods obtained from thinning operations to local citizens in conjunction with planned firewood days or to support designated campgrounds located on each parcel.
- 2011 Identify an area along Silver Lake that is publicly owned and is suitable for public swimming.
- 2011 Amend the existing Firearms Discharge Ordinance and Map to prohibit the discharge of a firearm on the eastern parcel. Bow hunting will continue to be permitted on both parcels.
- 2012 Designate funds obtained from the thinning operations to set up field days for winter activities and to attract mushroom hunters, bird watchers, canoeist and kayakers.
- 2012 Create more educational signs identifying plants and other worthy objects.



Description of the Lot

General Property Description and History

The two parcels of Bucksport's Town Forest covered in this forest management plan are located on the shores of Silver Lake. One of the properties is on the eastern shore accessible through the Town Garage. The other parcel is on the western shore between the public boat landing and the power line.

The GPS² coordinates of the main entrances are UTM 19T Easting: 516 161, Northing: 4 939 231 for the western parcel and Easting: 517 767 Northing: 4 937 583 for the eastern parcel.

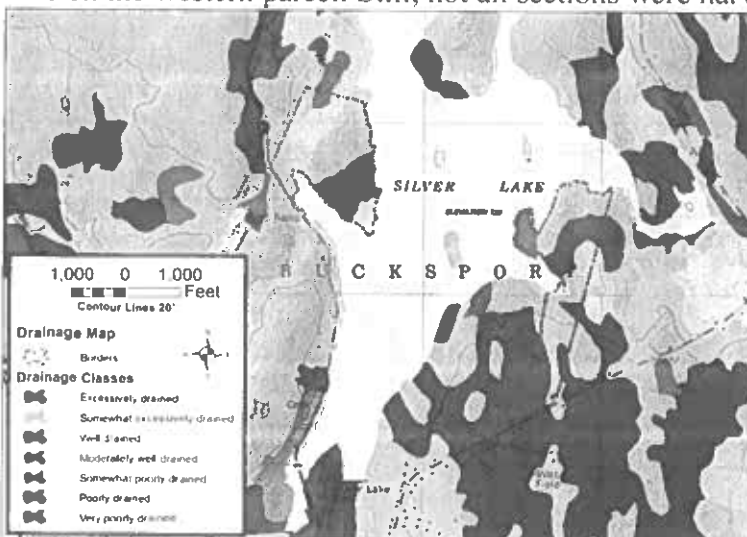
The Datum³ for the coordinates is NAD83.

The town purchased the parcel on the western shore of Silver Lake in 2000, the parcel on the eastern shore was purchased in 2005/2006.

Both parcels saw harvest activities just prior to the purchase. The harvesting was more extensive on the western parcel. Still, not all sections were harvested and big and older trees remain



Aerial photo of area. Property lines in orange.



on both parcels. Many improvements to mostly recreational values have been accomplished since the purchase.

Terrain/Hydrology

The drainage map to the left shows the range of drainage classes on the two parcels. Both parcels contain soils from 'somewhat excessively drained' soils all the way to 'very poorly drained' soils. Only the 'excessively drained' soils are missing on the parcels.

All areas on both parcels are accessible without the need to cross 'poorly drained' or 'very poorly drained' soils. A few moderately steep sections make the properties interesting without impeding on forest management.

² Please see the glossary for an explanation of GPS coordinates

³ Please see the glossary for an explanation of Datum

The slopes provide the possibility to create fantastic views over the lake and the opportunity to layout some more challenging walking trails. A few large boulders are scattered over the areas of the properties, again making the landscape more interesting to visitors but not causing problems for thinning operations. Both properties contain the top of a small gentle incline visible on the map to the right as a kind of circle of the contour lines. The highest part on the parcel east of Silver Lake is 250' along Central Street, and about 180' at the center of the forested part. The highest part on the western part is about 180' at the center of the parcel. Silver Lake is about 130' above sea level.

Interaction with Surrounding Properties

The properties are just north of Penobscot Bay with its maritime climate and its seawater fauna which extent their influence onto the properties. Immediate influence onto the properties comes from Silver Lake, a close to 800 acre lake that is also the source of drinking water for the town of Bucksport. The properties are just over 2 miles from town center, well within bicycle distance.

Most of the surrounding properties are forested. Some fields and other open areas are north of the properties. A power line, west of the properties, with its increased herbaceous vegetation and shrubs attracts song birds and other animals.



This makes movement for the deer much easier and conserve the animals energy. The softwood canopy also reduces temperature drops in clear and cold winter nights, again helping the animals to conserve energy.



Darker pattern on western property is a deer wintering area. Otherwise there are no information available at the Maine Natural Areas Program, which keeps track of endangered and threatened species and habitats.

The eastern parcel is only a stone throw north of the Miles Lane walking trails and it may not take much to create a walking connection between the properties.

Important Natural Features

The department of Inland Fisheries and Wildlife (IF&W) designated the forested part of the property on the western side of the lake (public landing side) as a deer wintering area. Deer wintering areas are characterized by mature softwood stands. The crowns intercept snow during snow falls and consequently reduce snow depth on the

Each of the parcels contains a small forested wetland. Forested wetlands are areas of increased wildlife activities and a trail should possibly lead just outside of the wetland so people can possibly observe some of the wildlife activities in the wetland without being too intrusive.

A number of large boulders are scattered throughout the property and are nice focal points, improving the aesthetics of the properties.



A lot of work went into the path system which is quite extensive on the eastern parcel

has significant influence on the costs to bring the trees to the market. Still, these costs only indirectly show up in the amount of stumpage a landowner may hope to receive for the wood products. All other factors the same, good and easy access will make a job more attractive to a logging contractor and therefore may increase his willingness to increase stumpage payments. Easy access may also make smaller jobs more attractive, which just might never get done if access to the site is difficult.

Access to both properties is excellent. Because it's forest open to the public, and the public is encouraged to use and explore the properties, it may be appropriate to place signs at the entrances advertising the facilities.

Western Parcel, At Public Landing Side Of Lake

Silver Lake Road leads all the way to the western property and a graveled right of way just north of the power line allows motorized access including truck to a small parking area in the northern part of the parcel.

Historical, Cultural, Archeological & Geological Sites

Thomas Weddle from the Geological Survey of Maine "checked in the listing of quarries and mines in the region and found nothing noted within the location [of the properties]".

The first inhabitants of Bucksport were a 5,000 year old prehistoric culture known as the Red Paint People, that would later be referred to as the Maritime Archaic. They were thought to be a highly advanced native fishing culture that buried red paint in their graves along with stone tools and weapons. The first archaeological dig in the state of Maine, if not the entire United States, was initiated by Professor Charles Willoughby in 1891 on Indian Point, on a site where the present-day mill is located.

Access to the Land and on the Land

Access to a property and to the trees on the property



Great trails are on the eastern parcel and are planned also for the western parcel

This gravel road is then blocked with large boulders beyond the parking area, but the road itself continues through the middle of the parcel all the way to the lake and may be available to motorized traffic if the boulders are moved.

A second woods road enters the property from the power line close to Silver Lake Road and enters the first mentioned road north of the meadow.

A short foot path enters the property from Silver Lake Road and leads a couple of hundred feet to a canoe landing place. Otherwise there are no walking paths on the property.

An extension of the walking trail system is planned for the near future. Including a trail along the shore of Silver Lake from Silver Lake Road all the way to the northeastern end of the property.

Planned for this parcel also are a 4-wheeler trail and a single track bike trail. Details and layout are still in the planning phase. It may be a good idea to involve members of clubs with knowledge for proper trail design and layout. In any case, care has to be taken that the trails do not cause erosion, or become a danger to visitor or trail users. A Maine Forest Service brochure called "Best Management Practices" is an essential guide for proper trail and woodsroad design. It is included in the package with this management plan and can be viewed online at http://www.maine.gov/doc/mfs/pubs/bmp_manual.htm.

An extensive skid trail system through parts of the parcel is a reminder of the harvest that took place just before the Town of Bucksport purchased the property. Some of these skid trails or parts of the trail possibly can be re-used for the next thinning operation, or for any of the other



Great hiking trail system on the eastern parcel

trail projects but it is more important to find the best location for the needs of the future trail than to re-use trail which mostly were designed to get the fastest to the desired trees.

A sledding and tobogganing run is planned from the heights of the meadow at the southern tip of the property into Silver Lake. This run should be coordinated also with a favorable view onto the lake and the opposite shoreline.

Eastern Parcel, Behind Town Garage

Center Street brings access to the eastern property. An excellent gravel road leads from Central Street through the Town



potentially great sled run and great view

Garage to a small parking lot on the south side of the forest.

Hiking possibilities to the different parts of the parcel and along the lakeshore are outstanding. There are considerations to open up the property to small recreational vehicles. I would argue

against this option and would limit especially motorized recreational vehicles to the western parcel. Too many different uses within one parcel may diminish the outing experience for all users. Why not limit more extensive vehicle use to western parcel and keep the eastern parcel for a more quiet and relaxed experience.



Nothern boundary line on the western parcel

A skid trail system to accommodate thinning still needs to be developed. Some parts of the hiking trail system can be used possibly even have to be used for thinning operations. Other parts need to be newly established.

Thinning operations have to be aware of the recreational uses and have to work extremely clean avoiding rutting and slash on the trail. This may have to be reflected in the stumpage payments a contractor may be able to pay for the harvested wood.

Condition of Property Lines

From any point on the borderline, at least two blazing marks should clearly be visible. The spacing between the blazing marks in general should not be much more than 100 feet. They should be much closer when the visibility is obstructed by vegetation.

Most of the property borders to the lake and a small part to Silver Lake Road. These areas need no special boundary markings. The other boundaries are marked. Some of the flagging should be renewed soon, or better it should be blazed and painted. Fortunately there are enough boundary markings and corner pins and locating the boundary lines is easy and does not need the expensive service of a surveyor.

By law, boundary lines must be marked within 200 feet from any harvest or thinning operation before the operation starts on the property.

Forest Health

Forest health is a difficult concept and even experts disagree how to address forest health issues properly. One of the problems is how much disease is required in a healthy ecosystem. Woodpeckers for example prefer and require sick, dying, and dead trees to excavate the nesting cavity. Many other secondary cavity breeders then depend on these cavities to rear their young successfully. Insect pests are best controlled with a healthy population of animals who feed on the insect pest. But how can we maintain a healthy population of those animals without a food source? Clearly, some disease is essential in a healthy ecosystem.

I use here the guidelines outlined in the UMCE Bulletin #7147 "Biodiversity in the Forests of Maine" to deal with specific issues concerning forest health and biodiversity.⁴

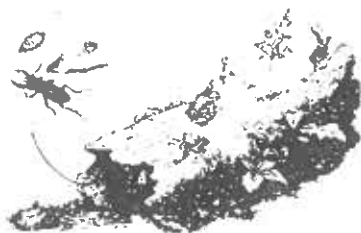


The presence or absence of foliage layers from the ground to the upper canopy determines vertical structure in a forest. The degree of crown closure influences the development of understory, shrub, and ground vegetation layers.

⁴ Please refer to the chapter about Biodiversity and Forest Health in the appendix for a list of all 22 characteristics

Vertical Structure and Crown Closure

Vertical structure is the extent to which plants are layered within a stand. The degree of layering varies with forest type. Crown closure is the degree to which the overstory foliage fills the growing space. In many forest types, vertical structure provides a range of habitats used by different organisms. Forests that are well stratified will generally support a greater array of plant and animal species as compared to forests in which most of the vegetation is concentrated in one layer.



Many organisms in the forest use downed woody material, from microscopic bacteria and fungi to black bears.

Due to the previous harvesting, the layering and canopy structure is quite good. The old skid trails are re-vegetating thereby providing food and shelter for ground dwellers. Most of the forest on the property is multi-layered and provides good conditions for a number of wildlife species.

Downed Woody Material, Snags, and Cavity Trees

Downed woody material refers to logs and slash of all decay stages. Snags are standing dead or partially dead trees that are relatively stable. Cavity trees are live or dead trees with existing cavities.

Both downed and standing woody materials are important for maintaining biodiversity because they provide habitat, at various scales, for microorganisms, insects, and a variety of vertebrates, as well as for mosses, liverworts, and some vascular plants and even other trees.

Like in almost all forests in Maine, there is a lack of large downed woody material, snags and cavity trees on the property. In previous harvests all large segments of trees had a market, and it was considered wasteful to leave anything behind to rot on the ground.

Now we know better. Rotten sections of large diameter trees are better left in the woods and not sold for low quality pulp or biomass. Snag trees should also be left in the woods whenever they do not constitute a safety hazard. Therefore, snags alongside roads or close to trails should be cut; snags in the middle of a forested section should be left standing. Especially large diameter snags are important for cavity nesting animals.

Modern harvesting machines easily can create brush piles, or once in a while bunch together a number of smaller low value trees to simulate coarse woody debris. Creating brush piles is also a rewarding project for school kids or scouts working in the woods.



This tree provided many a good meal for woodpeckers.

Mast⁵

Mast includes nuts, seeds, berries, and fruits. Nuts and seeds are referred to as "hard mast," fruits and berries as "soft mast." The mast supply can be greatly improved by thinning the

⁵ See glossary in the appendix

trees and giving each individual tree enough room to develop a good crown. Crown size and mast production are strongly correlated. The bigger the crown the disproportionately more seeds a tree produces.



Balsam fir mast. Top 5 feet are female cones; below cones are brown male flowers

Mast provides critical food for many wildlife species. Birds, squirrels, mice, deer, and many others, and those animals then are food for other animals higher up the food chain. The droppings of all the animals even those highest in the food chain then provide nutrients to the ground 'feeding' the plants and the nutrient cycle start anew.

Insect and Disease Conditions⁶

Most of the fir on the property is starting to rot and many are dying. Most of balsam fir in the overstory

should be removed in the next thinning operation. Only the best firs should remain in the stand or if the cutting of the fir results in too big openings.

White pine weevil is a problem for white pine regeneration. White pines growing in full sunshine develop a bigger top bud attracting the weevil which then will kill the top of the tree. The tree in response uses one or two of the highest branches to develop new leaders. In the best case scenario the stem of the tree is crooked in the worst case scenario 2 or even 3 or 4 new leaders develop and the tree is economically ruined and health wise compromised.

To counteract the weevil, white pine should grow up in partial shade of overstory trees. 40 to 60% shade often is sufficient to keep the weevil in check and to raise a good number of healthy white pines. This fits well with the overall management goal on the property. Proper thinning will leave the stand with about 40 to 60% shade.

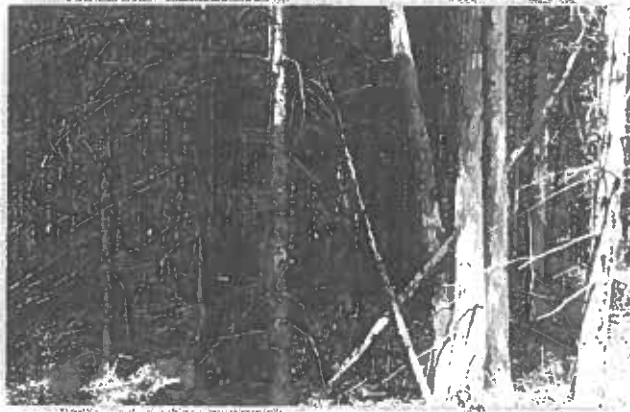
Parts of the property are in the exclusion stage of forest succession and many trees become suppressed and are declining and consequently dying. Thinning these stands will speed up the forest succession and will help to improve the quality of the trees and the overall health of the forest.

Spruce beetle may become a problem for the mature red and white spruce. I did not observe any beetle mortality, but the beetle is a constant threat to mature coastal spruce and can kill mature trees in a matter of months. Especially blow down of large trees should be watched for the characteristic entry holes and sawdust underneath the holes. If infestation is observed, the infested trees need to be removed or at least the bark needs to be heated above 180F. This may be done by soaking the bark with kerosene and burning the bark. This can be done during the winter with little danger of a forest fire. Key is that the inner bark is heated beyond the survival temperature of the beetles.

⁶ More information about the damaging agents can be found in the appendix

Another potential threat to the health of trees on the property involve hemlock and the hemlock woolly adelgid. This insect still is limited to southern Maine, but it is on its way to our area and is a serious threat to hemlock trees.

The Maine Forest Service should be contacted if hemlock woolly adelgid is observed on the property.



If lightning strikes here during a dry spell...

Protection from Forest Fire⁷

With global warming all but fact, protection from forest fire is increasingly important on woodlots. Even if global warming should result in more precipitation for our region, as some climatologists predict there still will be extreme years with record heat and drought. Fire protection is the smart thing to do. Three factors are essential in fire protection.

1. Control of the fuel load in the forest
2. Access to the forest to fight the fire.

3. A well thought out plan of actions in case of a fire.

Thinning the stands and removing dead, dying, and weak trees will reduce fuel load and thereby fire danger, especially if slash and tops are removed from site. Not to thin will slowly increase the total fuel load increasing the fire danger in the long run.

More vital trees, a result of thinning, will be able to grow their roots deeper into the soil and possibly finding water where smaller, weaker trees would dry out. Large trees also are more fire resistant than small trees. Whatever makes a tree grow faster (like thinning) will therefore help to reduce fire danger on the property in the long run.

I recommend to remove all slash and dead combustible material within 200' of any residence and to leave the slash in the rest of the parcel.

The excellent access roads to the properties and into the center of each of the properties satisfies the second of the three protection factors.

It may be wise to walk the property with representative of the fire department to check on fire places and potential camping areas on the property, to show the fire department representatives where water can be obtained on the property and to develop a plan in case of a fire.

Fire in Maine is not as common as in the western US, but Maine too had devastating large fires about a half a century ago when global warming was not as pronounced as today.

Wildlife Conditions

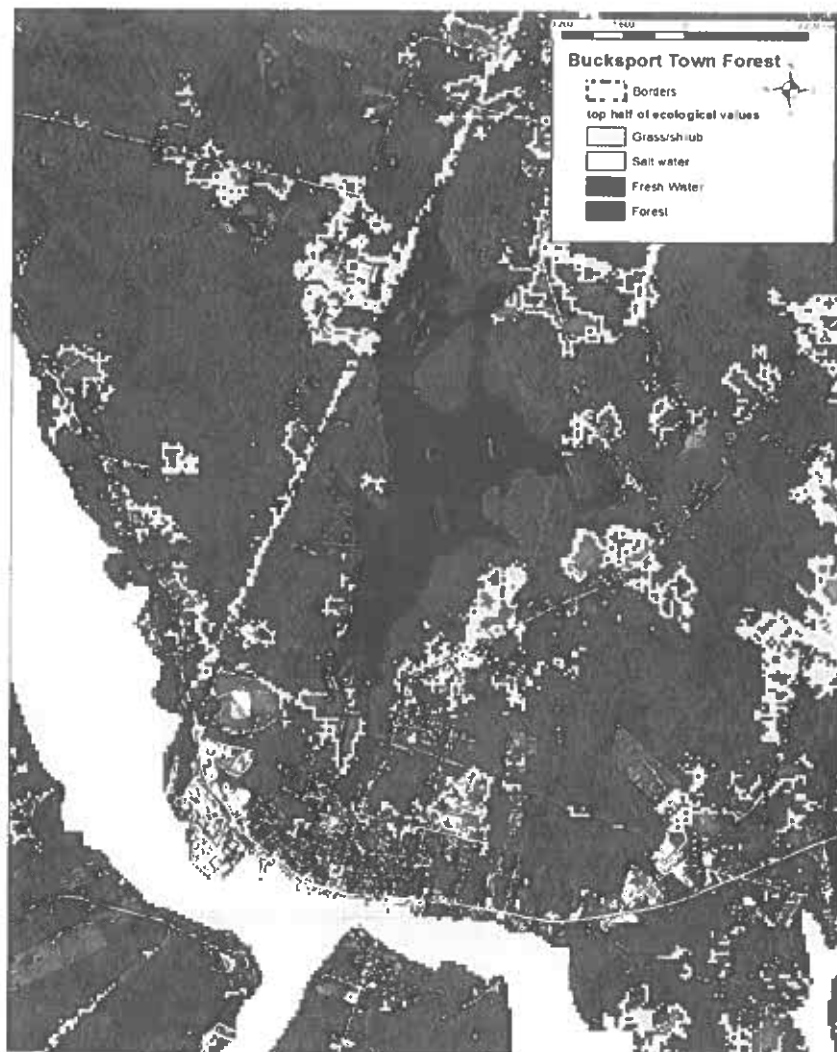
A Maine Audubon publication developed by Rob Bryant called "Focus Species Forestry, a guide to integrating timber and biodiversity management in Maine⁸" provides a very well rea-

⁷ Maine Forest Service forest fire emergency number 1-888-900-3473

⁸ The appendix lists the focus species on the parcel and gives detailed forest management descriptions for each of the focus species.

soned approach to wildlife management in Maine. The rationale of focus species is described as following:

"The goal of focus species forestry is to provide habitat for the vast majority of forest species. To account for the range of habitat needs of Maine's wildlife and other aspects of biodiversity,



Location of ecological values for different habitats

focus species management is based on a suite of focus species that cover the habitat requirements of most other species found in the area."

"... The primary threats identified by the (advisory) committee included:

- **mature and late-successional forest fragmentation and loss**, especially on large commercial timberlands;
- **Loss of very young forest**, particularly in parts of southern Maine where the forest is maturing and light partial harvests are common;
- **Simplification of the forest**, in particular the decline in standing dead and down trees where "clean" silviculture or short-rotation, even-aged management is practiced; and

- **Forest loss and fragmentation**, especially due to sprawl and timberland liquidation in southern and central Maine."

It is clear that on a 100-acre parcel the focus must be on a few habitats and a few species out of the many different possibilities.

Four forest types have some important for wildlife considerations on the property.

1. Aspen-Birch
2. Eastern hemlock
3. Spruce Fir
4. Riparian and Wetland Forest

Aspen-Birch

Identification

Aspen-Birch forests are post-disturbance communities typically characterized by paper birch, bigtooth aspen, and trembling aspen. Depending on the region of the state and soils, associated species may include red maple, red oak, red spruce, yellow birch, sugar maple, and white pine.

Ecology

This relatively short-lived (less than 100 years) early successional forest type is dominated by shade-intolerant species that typically become established after severe disturbances such as fire or clearcutting and other forms of heavy harvests. Aspen-birch typically occurs in large patches up to several hundred acres that reflect past disturbance. On better soils this type is likely to be replaced over time by northern hardwoods. On cool and/or moist sites at high elevations or in lowlands, succession will tend towards spruce-fir.

Focus Species		Rare Species
Early Successional Forest	Mature Forest	none
Snowshoe hare Ruffed grouse Chestnut-sided warbler	Northern goshawk Ruffed grouse	Rare Natural Communities
		none

Focus Species Management	
Overview	Even-aged management is generally recommended to maintain aspen-birch forests. Alternately, landowner objectives or landscape analysis may suggest that encouraging natural succession to take place is the preferred option. When present, aspen-birch is an excellent type for developing and maintaining early successional habitat. Aspen regenerates by root suckering, while wind-blown seed is the primary method of birch regeneration. An irregular harvest that leaves unharvested patches and individual trees of long-lived species will emulate natural disturbances better than traditional even-aged management.
Single-tree and Group Selection	Avoid single-tree selection if the goal is to maintain aspen-birch. Large-group selection will sustain these species, but there will be an increasing component of more shade-tolerant species over time.
Shelterwood, Small Patch Cuts, and Clearcuts	Small patch cuts (2-5 acres), seed-tree cuts, or clearcuts are the best for regenerating aspen-birch and providing the dense regeneration preferred by ruffed grouse and woodcock. Shelterwood may result in excessive birch mortality and discourage root suckering of aspen.
Other	Refer to landscape-scale guidelines (Section 8). Use the amount of aspen-birch in the landscape and the amount of other early successional hardwoods to help decide whether to maintain aspen-birch or encourage succession to another type. Soil scarification is important for birch regeneration. Older declining aspen clones may not sprout well. Follow recommendations for snags, cavity trees, and downed woody material and other stand-level recommendations (Section 7). If the goal is to encourage succession, on better sites northern hardwoods can be favored by thinning and eventually released by removing part or all of the overstory. On poorer sites spruce and fir, which often become established in the understory, may be released as the aspen and birch mature. Try to maintain aspen inclusions in other forest types near riparian areas where beaver may be present.

Wildlife

Due to structural similarity and landscape proximity, aspen-birch forests support many of the same species as northern hardwoods in similar development stages. Depending on the time of year, ruffed grouse will use seedling, sapling, or mature stands, and aspen is the beaver's preferred food. Young aspen-birch forests are also used by woodcock for feeding and brood cover. Both aspen and birch are prone to internal decay and hence make excellent but short-lived cavity trees.

Eastern Hemlock

A small section in the north eastern part of the eastern parcel can be described as eastern hemlock type.

Identification

Eastern hemlock in pure or mixed stands is the dominant species. Depending on the region of the state and surrounding forest type, associates may include red oak, white pine, birches, maples, spruce, cedar, or fir.

Focus Species		
Early Successional Forest	Mature Forest	Late-successional Forest
Chestnut-sided warbler Snowshoe hare: when softwood understory is present Ruffed grouse	American marten (northern region) fisher (southern region) white-tailed deer (northern region) wood thrush pileated woodpecker barred owl wood thrush Redback salamander	No species currently known due to limited research

Wildlife

Hemlock provides important food, cover, and nesting habitat for many species. Black bears use hemlock for denning and cubs climb them for escape cover. Hemlock stands provide important deer wintering cover in much of the Northeast. Blackburnian and black-throated green warblers are strongly associated with hemlock in mixed hemlock-hardwood forests.

Rare Species

none

Rare Natural Communities

none

Focus Species Management	
Overview	Hemlock's greatest wildlife value is as a mature forest component of the landscape. Its deep crown provides excellent cover while frequent and profuse cone crops provide abundant food for many birds and small mammals. Management should strive to maintain stands in a mature condition through periodic light regeneration harvests. Individual trees and groups within northern hardwoods and oak-pine provide important food and cover and should be maintained and encouraged. hemlock regenerates best on partly shaded, scarified soil.
Single Tree Selection and Group Selection	Both approaches are well suited to maintaining mature forest conditions and are consistent with natural disturbance patterns. Small-group selection (0.1 acre or less) can be used to regenerate hemlock while creating within-stand patchiness.
Shelterwood and Clearcut	Researchers recommend a 2- or 3-stage shelterwood with 70-80% canopy cover with scattered gaps. If the shelterwood system is used, be sure to retain the overwood in a two-aged system or maintain mature hemlock cover nearby. Clearcutting is not recommended in hemlock forests.
Other	

Spruce-Fir

Most of the area in both parcels can be described as spruce-fir.

Identification

Spruce-fir forests are characterized by mixtures of red spruce and balsam fir in pure stands or with other species. Common associates include yellow birch, paper birch, and other northern hardwood species as well as hemlock, northern white cedar, white spruce, and black spruce. Stands dominated by hemlock or white pine that include a strong presence of red spruce are also part of the spruce-fir ecosystem.

Ecology

Rare Species
Canada lynx
Bicknell's thrush
9 rare plants
Rare Natural Communities
Fir-heartleaved birch subalpine forest

<u>Focus Species</u>		
Early Successional Forest	Mature Forest	Late-successional Forest
Snowshoe hare Magnolia warbler	American marten (North region) Fisher (South Region) White tailed deer (North region) Black-backed woodpecker Redback salamander	Gray horse lichen (<i>Brvoria capillaries</i>)

Spruce-fir forests frequently share the same landscape as northern hardwoods, but are found on cooler sites — notably valley bottoms and high-elevation areas, and in a narrow band along the coast — or where soils are somewhat-poorly to poorly drained. Transitional stands may contain up to 50% hardwoods. The Maine Natural Areas Program recognizes 6 spruce-fir subtypes (see Appendix B).

Wildlife

Several species — including spruce grouse, gray jay, black-backed woodpecker, and bay-breasted, magnolia and Cape May warblers — are found almost exclusively in spruce-fir forests. Marten are strongly associated with this type, either in pure stands or in mixed hardwood-spruce-fir forests. Young spruce-fir is critical for snowshoe hare. Relatively mature to mature stands are critical deer wintering areas in northern Maine.

Focus Species Management	
Overview	Under natural conditions, disturbances that lead to regeneration vary by site and location. Spruce budworm and spruce bark beetle cause severe mortality on a cyclical basis, and blowdowns are common on coastal islands, high-elevation sites, and exposed sites with a high water table. Large stand-replacing disturbances may occur, but partial canopy loss in small to large patches is more common. On sites with a northern hardwood or hemlock component, regeneration is more likely to occur in smaller canopy gaps. Disturbance frequency increases with the percent of fir, soil moisture, or exposure to wind. On better sites, spruce stands will easily persist more than 200 years.
Single Tree & Group Selection	Single tree or group-selection harvests are more appropriate on better-drained, secondary spruce-fir sites where mixed spruce-northern hardwood stands are found.
Shelterwood and Clearcut	An irregular shelterwood system with reserve trees and patches resulting in a two-aged stand will mimic the cyclical natural disturbance pattern found on primary spruce-fir sites. Use this approach to create and maintain abundant browse and cover needed by snowshoe hare, critical prey for bobcat and the threatened Canada lynx. Moose, magnolia warblers, spruce grouse, ruffed grouse, and other young-forest species will also benefit. Optimum hare browse is found in dense regeneration that is 5-20 years old. True clearcuts are less appropriate for maintaining the natural forest community because they create excessive competition from hardwoods and raspberries, which adversely impacts spruce-fir regeneration and ground cover. Where management objectives result in complete overstory removal in the shelterwood or clearcut system, leave "islands" of reserve trees.
Other	Follow recommendations for snags, cavity trees, and downed woody material and other stand-level guidelines. Favor spruce over fir in intermediate thinnings and harvest. Increasing the percentage of spruce will decrease susceptibility to spruce budworm, which prefers fir, and the longer life span of spruce will allow more management flexibility. In northwestern Maine where lynx may be found, check with the Maine Department of Inland Fisheries and Wildlife (MDIFW) In northern and eastern Maine, work with MDIFW to develop a long-term plan for managing deer wintering areas.

Riparian and Wetland Forest

Identification

Riparian and wetland forests as defined here include forests that contain or are adjacent to seasonal or permanent standing water, including small pools, seeps, intermittent and perennial streams, rivers, ponds, lakes and coastal waters. Forest types may include wetland and floodplain communities as well as upland forest ecosystems described in this manual (e.g. oak-pine, northern hardwoods, spruce-fir) that border rivers, streams, and lakes.

Ecology

Riparian and wetland forests provide several major functions, including minimizing downstream flooding, filtering runoff and protecting water quality, maintaining cool water temperatures for fish, providing the energy for the base of the aquatic food chain in the form of fallen leaves, and providing logs that create cover for fish and invertebrates and a substrate for aquatic algae.

Wildlife

These forests support an unusually high concentration of animals that includes tree-nesting waterfowl (wood duck, common goldeneye, hooded merganser, and common merganser) and other birds, as well aquatic and semi-aquatic animals such as beaver, otter, mink, and moose. Large pines provide important nesting and loafing sites for bald eagle and osprey. Upland mammals such as deer, bobcat, coyote, and bats frequently use shoreland forests often form the nucleus of large forest blocks and a network of travel corridors that are critical to many species. Up to 80% of Maine's vertebrate wildlife species use riparian habitat during some or all of their life cycle.

Rare Species

Bald eagle, Blanding's turtle, spotted turtle, box turtle, Atlantic salmon,

More than 20 rare plants, 4 insects, 2 freshwater mussels and 1 fish

Rare Natural Communities

Hardwood river terrace, hardwood seepage forest, silver maple floodplain forest, cedar spruce seepage forest

Focus Species⁹

Beaver
Pileated woodpecker
Northern waterthrush
Wood turtle
Northern dusky salamander
Brook trout

⁹ Focus species vary with water body type. See management table on following page.

Focus Species Management		
Water Body	Width (ft.)	Focus Species/ Primary Management Goals
Seeps, intermittent streams	≤75	Focus Species: Northern dusky salamander Management Goals: • Protect water quality by avoiding soil disturbance and sediment runoff. • Maintain shade along stream channel.
First and second-order perennial streams	75-100	Focus Species: All Management Goals: • Protect water quality and maintain shade. • Manage for large snags and cavity trees.
Third- and forth-order streams	≤250	Focus Species: All Management Goals: • Protect water quality and maintain shade. • Manage for large snags and cavity trees. • Maintain large pines for eagle and osprey nest and roost trees adjacent to rivers, ponds > 10 acres and costal waters • Buffers in excess of 75ft. provide wildlife travel corridors and buffer aquatic wildlife from human activities in uplands.
Ponds and non-forested wetlands <10 acres: coastal waters	75-100	
Ponds and non-forested wetlands >10 acres: coastal waters	≤ 250	
Recommendations: ✓ Always apply appropriate Best Management Practices¹⁰ to control erosion and sedimentation. ✓ Modify timber management as needed to achieve riparian management goals (column 3) ✓ Use single-tree selection to maintain 65-70% crown closure within 75 ft. of the water body or wetland edge. For wider zones, small-group group selection (up to quarter0acre openings) beyond 75 ft. may be appropriate. ✓ Refer to BMP handbook for buffer zone widths on slopes over 30%. Greater width may be required to include seeps, forested wetlands, and floodplains adjacent to water bodies. ✓ Wider buffer zone widths are beneficial when large, heavily harvested areas about riparian areas. Some regional guidelines recommend riparian management zones up to 600 ft. on fourth-order streams. ✓ Flag seeps and intermittent streams before snowfall. ✓ Follow recommendations for snags, cavity trees, and downed woody debris (Section 7) ✓ State and local regulatory standards also apply.		
References: Carlson 1999, Pelletier 1999a		

¹⁰ Best management Practices for Forestry: Protecting maine's Water Quality.

Vernal Pools

Identification

Vernal pools are small (typically less than one acre) seasonal wetlands that lack perennial inlet or outlet streams and have no permanent fish populations. Most vernal pools hold at least 12 in. of water at spring maximum and contain water for 2.5 months or more in the spring and summer. Typically they dry out in late summer and begin to fill again with fall rains. The presence of a vernal pool is confirmed by spring surveys (April or May depending on weather conditions and region) for adults or egg masses of one of the four vernal pool indicator species (see Wildlife, below). In late summer or fall look for depressions with water-blackened leaves.

Focus Species are spotted salamander and wood frog. Indicator species in Maine are wood frogs, spotted salamanders, blue-spotted salamanders, and four-toed salamanders

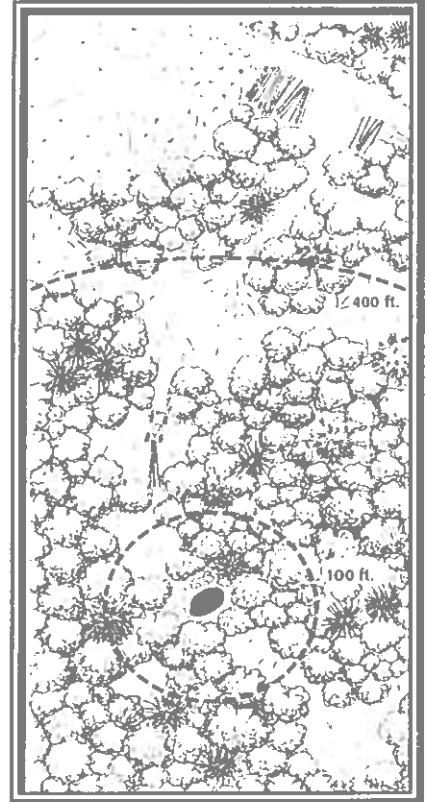
Ecology

Vernal pool amphibians lay their eggs in early spring. For the gilled tadpoles and salamander larvae it is a race against time to develop legs and lungs and migrate to the nearby forest before the pool dries. Vernal pools are largely found in forested habitats where vernal pool amphibians spend most of their lives. Most vernal pool salamanders live in the forest soil within a few hundred feet of the pool.

Wildlife

Wood frogs, spotted salamanders, blue-spotted salamanders, and four-toed salamanders are Maine's vernal pool indicator species. Fairy shrimp occur less frequently. Populations of these animals are dependent on vernal pools that are absent of predatory fish. Green frogs, spring peepers, caddis flies and rare reptiles (see below) may also be present. While most amphibians return to the pools where they were born, enough migrate to other pools to prevent inbreeding and to help sustain the population across the landscape. Adults, larvae, and tadpoles of vernal pool amphibians are an important prey base for forest animals.

Blanding's turtle (Maine threatened) and spotted turtle (Maine endangered) may be found in vernal pools in York and Cumberland counties. Four-toed salamander, ribbon snake, and wood turtle (all Maine special concern) may be found in vernal pools statewide. Several rare plants are associated with vernal pools in southern Maine



Ecologically sensitive forest management activity around a vernal pool (dark oval at bottom center). Note the decreasing harvest intensity with increasing proximity to the pool.

Focus Species Management ¹¹		
Vernal Pool Depression	Vernal Pool Protection Zone 0-100 ft.	Amphibian Life Zone 100-400 ft.
Identify and flag the pool boundary during the spring wet season or by using dry season indicators. Do not disturb the pool depression with equipment, slash, or sediment.	Maintain an average 75% canopy cover of trees over 20-30 ft. tall to protect young amphibians leaving the pool. Harvest in frozen or dry conditions to prevent rutting and protect habitat of soil-dwelling salamanders. Maintain abundant coarse woody debris used as feeding habitat and cover by amphibians.	Maintain a minimum of 50% canopy cover of trees over 20-30 ft. tall and keep openings below one acre. Harvest in frozen or dry conditions to minimize soil disturbance. Maintain abundant coarse-woody debris.

Threatened and Endangered Species

I did not find any sign of threatened or endangered Species on the property. Still I recommend having a biologist inventory the properties and identify herbaceous plants, mosses and lichens, possibly mushrooms. From their findings and photographs a small brochure could be developed: "the plants and animals in your Town Forest".

Water Quality, Wetlands and Riparian Areas

Water quality issues are very important not the least because Bucksport's water supply comes from Silver Lake. Some steep section close to the water may quickly become problem areas and erosion may muddy Silver Lake if thinning operations or trail construction do not apply what is known as Best Management Practices. Best Management Practices is a Maine Forest Service brochure to avoid and counter-act erosion and can be downloaded from

http://www.maine.gov/doc/mfs/pubs/bmp_manual.htm

A hardcopy of the BMPs is included with this plan.

Management objectives recommend a forever wild designation for the forested wetland at the northern border of the western parcel.

Recreation Conditions

Recreation conditions are excellent on both properties. The eastern parcel (behind town garage) already has a great system of trails. Many name signs on bushes and trees along the trails invite the visitor to become familiar with the property. The trails are very well marked and lead into all of the different sections on the property. A trail with a few benches leads along the shoreline. More benches along the shore are planned.



¹¹ For more information on identification and management of vernal pools see: *Maine Citizens Guide to Locating and Describing Vernal Pools* and *Forestry Habitat Management Guidelines for Vernal Pool Wildlife in Maine*. Both are available from Maine Audubon, Conservation Department (207-781-2330).

I recommend restricting the eastern parcel (behind town garage) to foot traffic only. **Motorized trail riding** should be limited to the **western parcel** (boat landing side). Motor noise from launching the motor boats is already considerable on that side of the lake and 4-wheeler will not significantly change the noise level in this area.



Perfect camping site already in the western parcel

In addition to a 4-wheeler trail, a **single track bike trail** may be a great attraction to invite mountain bikers into the town. This may also be an economic stimulus to the Town of Bucksport as single track bike trails attract enthusiasts from great distances. This hopefully will also attract Bucksport's youth at a time where a lack of outdoor activities takes its toll on the health of many young people. Bucksport Town Forest is within biking distance of the town forest making it an easy destination for local bikers.

To be able to create the **longest possible trail** on the property, a trail meandering along the outer edge of the property should be considered. Because of the 4-wheeler use, this trail should stay in some distance away from the shoreline and also from the forested wetland as a safeguard against erosion problems. From this 'backbone' of the trail system, shortcuts and loop trails may fork off.

Bucksport's Conservation Commission recommends a **sledding and tobogganing run** down the meadow in the western parcel. Cutting the vegetation at the end of this run also would improve the year round view over the lake and create a viewshed at the top of the incline.

This field should not only be used for sledding but also for **camping** and as an open recreational area. Trees encroaching into the field, especially the weeviled pine, should be cut and the field periodically moved.

The **eastern parcel** in contrast is still relatively quiet and tranquil and motorized access may spoil the experience for many visitors. This parcel may lend itself more to **birding, mushroom hunting, and nature watching** in general. **Guided tours** may be a way to attract young and old to use and enjoy the Town Forest. Because this parcel is close to the Bucksport schools, student activities, science classes, or outdoors club activities could be planned here.



Beautiful quiet walking path on the eastern parcel

It is planned to move the gate at the parking lot at the eastern parcel (behind town garage) further into the property and closer to the lake. A canoe launching spot is planned at that location.

At the time this plan is written, a town ordinance is still in effect prohibiting **swimming in the lake**. Efforts are underway to repeal this ordinance in a vote in summer 2012. This would greatly improve the recreational qualities of the properties.

A few, more secluded and primitive camping sites may be created possibly more towards the northern end of the parcel. Those campsites should provide a more wilderness camping experience.

It may be informative and rewarding for the town's citizens and visitors to have walks with botanists, birders, mushroom hunters, or other outdoor specialists and a small fund may be established to attract top people in their fields.

Timber Production Potential

The following soils occur on the property.

Eastern Parcel

BgB — Brayton fine sandy loam, 0 to 8% slopes, very stony

BwC — Buxton silt loam, 8 to 15 percent slopes

DbC — Dixfield fine sandy loam, 8 to 15% slopes, very stony

DsB — Dixfield-Colonel complex, 3 to 8%

DtB — Dixfield-Colonel complex, 3 to 8% slopes, very stony

LaB — Lamoine silt loam, 3 to 8 percent slopes

LbB — Lamoine-Scantic complex, 0 to 8 percent slopes

LsE — Lyman-Schoodic complex, 15 to 45 percent slopes, very stony

ThC — Thorndike – Winnecook complex, 0 to 15 percent slopes, very stony

WkC — Winnecook-Thorndike complex, 3 to 12 percent slope

Ws — Wonsqueak and Bucksport mucks

BgB — Brayton fine sandy loam, 0 to 8% slopes, very stony

This very deep, nearly level to gently sloping, poorly drained soil is on glacial till uplands. It is in depressions, along drainage ways and at the foot of slopes where it receives runoff from higher elevations. Slopes are smooth and concave.

The soil is poorly suited for woodland, but if used for this purpose it is best suited for softwood production. The main tree species are red spruce, balsam fir, and red maple. The main limitations of this soil are stones and boulders on the surface and the high water table. Equipment use is severely restricted on this soil.



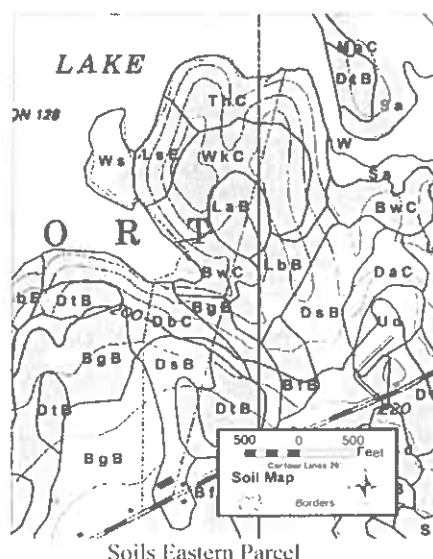
Mixed forest on Buxton silt loam.

BwC — Buxton silt loam, 8 to 15 percent slopes

This very deep, strongly sloping, moderately well drained soil is in coastal lowlands and river valleys. Slopes are smooth and convex.

This soil is well suited for woodland and is best suited for softwood production. The main tree species are white spruce, balsam fir, hemlock, and red maple. White pine planted on this soil produce well, but require considerable management to reduce competition from other species.

The abundant natural reproduction of spruce and fir makes the soil well suited for pulpwood production. The main limitations of this soil are the high water table and plant competition. Windthrow hazard is moderate on this soil because the high water table causes trees to be shallow rooted. Strip cutting or clear cutting will expose fewer trees to the



wind and will help to prevent windthrow. Competition from hardwoods may require suppression by weeding and thinning to enhance the growth of softwood stands.

DbC — Dixfield fine sandy loam, 8 to 15% slopes, very stony

This very deep, strongly sloping, moderately well drained soil is on the side slopes of glacial till ridges. Slopes are smooth and convex.

This soil is well suited for hardwood production. The main limitations are plant competition and the high water table. Softwoods produce well on this soil, but require considerable management to reduce competition from other species. Plant competition will restrict natural regeneration. Windthrow hazard is moderate on this soil because the high water table and compact substratum cause trees to be shallow rooted. Harvesting to reduce the number of trees exposed to the prevailing winds helps to prevent windthrow.

DsB — Dixfield-Colonel complex, 3 to 8%

This very deep, gently sloping unit is on the crests or lower toe slopes of glacial till ridges. Dixfield soils are on knolls, upper slopes, and crests of ridges. Colonel soils are in slightly lower positions than Dixfield soils. Slopes are smooth and convex on Dixfield soils and smooth and concave on Colonel soils.

This unit is well suited for hardwood production. The main limitations of this unit are plant competition and the high water table. Softwoods produce well on these soils, but will require considerable management to reduce competition from the hardwood species. Plant competition will restrict natural regeneration in the wetter areas.

Windthrow hazard is moderate on the Dixfield soils and severe on the Colonel soils because the high water table and compact substratum cause trees to be shallow rooted. To reduce windthrow, as few trees as possible should be exposed to the prevailing winds by harvesting operations.

DtB — Dixfield-Colonel complex, 3 to 8% slopes, very stony

This very deep, gently sloping unit is on the crests or lower toe slopes of glacial till ridges. Dixfield soils are on knolls, upper slopes, and crests of ridges. Colonel soils are in slightly lower positions than Dixfield soils. Slopes are smooth and convex on Dixfield soils and smooth and concave on Colonel soils. Up to 34 percent of the surface of the unit is covered with stones.

The unit is well suited for hardwood production. The main limitations of this unit are plant competition and the seasonal high water table. Softwoods produce well on these soils, but require considerable management to reduce competition from the hardwood species. Plant competition will restrict natural regeneration in the wetter areas. Windthrow hazard is moderate on the Dixfield soils and severe on the Colonel soils because the seasonal high water table and compact substratum cause trees to be shallow rooted. To deduce windthrow, trees left in wetter areas during harvest should not be exposed to the prevailing winds.



Quaking aspen on Dixfield soil

LaB — Lamoine silt loam, 3 to 8 percent slopes

This very deep, gently sloping, somewhat poorly drained soil is on coastal lowlands and in river valleys. Slopes are smooth and convex.

This soil is well suited for softwood production. The main tree species are red spruce, balsam fir, and red maple. The abundant natural reproduction of spruce and fir makes these soils well suited for pulpwood production. The main limitations of this unit are plant competition and the high water table. White pine will produce well on this soil, but requires considerable management to reduce competition from other species. Plant competition will restrict natural regeneration. Site preparation and weeding may be needed to reduce this competition. Windthrow hazard is severe on this unit because the seasonal high water table cause trees to be shallow rooted. Strip cutting or clearcutting will expose fewer trees to the wind and will help to prevent windthrow. Because of the high water table, harvesting operations should be restricted to the drier months or when the ground is frozen; equipment is easiest to use then and will cause the least damage to the site.

LbB — Lamoine-Scantic complex, 0 to 8 percent slopes

This very deep, nearly level to gently sloping unit is on coastal lowlands and in river valleys. The Lamoine soils are on small knolls, and the Scantic soils are in depressions. Slopes are



Somewhat poorly drained Lamoine soil
and fir collapses

smooth and slightly convex on the Lamoine soils and slightly concave on the Scantic soils. Slope ranges from 0 to 3 percent on the Scantic soils and 3 to 8 percent on the Lamoine soils.

Most of this unit is used for woodland, much of which was hay and pasture. Some areas are used for hay and pasture or are idle fields that are reverting to woodland.

This unit is fairly well suited for woodland and best suited for softwood production. The main tree species are red spruce, balsam fir, and red maple. The abundant reproduction of spruce and fir makes these soils well suited for pulpwood production. The main limitations of this unit are

plant competition and the high water table. Plant competition is severe on this unit. Site preparation and weeding may be needed to suppress hardwoods. Equipment is difficult to operate on the wetter parts of the unit except during the drier parts of the year or when the ground is frozen.

Windthrow hazard is severe on this unit because the high water table causes trees to be shallow rooted. Strip cutting or clearcutting will expose fewer trees to the wind and will help to prevent windthrow.

LsE — Lyman-Schoodic complex, 15 to 45 percent slopes, very stony

This hilly to very hilly unit is on the side slopes of upland glacial till ridges and mountains. Slopes are mainly complex.

The unit is poorly suited for woodland. The main tree species are red spruce and balsam fir. The abundant natural reproduction of spruce and fir makes this unit best suited for pulpwood production. The main limitations of this unit are soil depth, erosion hazard, and slope. Seed-

ling mortality is moderate on the Lyman soils and severe on the Schoodic soils because of droughtiness. Windthrow hazard is severe on this unit because the very shallow and shallow depth to bedrock cause trees to be shallow rooted. Strip or clearcutting will reduce windthrow damage. Severe erosion can occur on the skid trails and roads on the steeper slopes in the unit. Erosion can be reduced by locating the skid trails and roads on the contour and by using water bars on roads. The use of equipment is difficult on the steeper slopes of the unit.

ThC — Thorndike – Winnecook complex, 0 to 15 percent slopes, very stony

This nearly level to strongly sloping unit is on upland glacial till ridges. The Winnecook soils are mainly in a slightly lower position on the landscape than the Thorndike soils. Up to 3 percent of the surface of the unit is covered with stones. Slopes are smooth and convex. This unit consists of about 45 percent shallow, somewhat excessively drained Thorndike soils; 30 percent moderately deep, well drained Winnecook soils; and 25 percent other soils.

This unit is fairly well suited for both softwood and hardwood production. On the shallow Thorndike soils and very shallow inclusions, shade-tolerant softwoods are the main tree species. On the moderately deep Winnecook soils and the deep inclusions, hardwoods are the main species. The main limitations of this unit are droughtiness and depth to bedrock. Seedling mortality is moderate on the shallow Thorndike soils because of droughtiness. Windthrow hazard is severe on the shallow Thorndike soils and moderate on Winnecook soils because the bedrock limits rooting depth. Strip cutting or clearcutting will reduce trees exposed to the wind and will help to reduce windthrow.



These beautiful large trees should on Thorndike soils should be freed of competition and made more visible

WkC — Winnecook-Thorndike complex, 3 to 12 percent slope

This gently sloping to strongly sloping unit is on upland glacial till ridges. The Winnecook soils are mainly in a slightly lower position on the landscape than the Thorndike soils. Slopes are smooth and convex.

This unit is fairly well suited for woodland and is suited for both softwood and hardwood production. The main tree species on Winnecook soils are hardwoods. The main tree species on Thorndike soils are shade-tolerant softwoods. The main limitations of this unit are droughtiness and depth to bedrock. Seedling mortality is moderate on the Thorndike soils because of droughtiness. Windthrow hazard is severe on the Thorndike soils and moderate on Winnecook soils; bedrock limits rooting depth, and trees are shallow rooted. Strip cutting or clearcutting will reduce trees exposed to the wind and reduce windthrow.

Ws — Wonsqueak and Bucksport mucks

This level to nearly level unit is in depressions in glacial ground moraine and glaciofluvial deposits and along the edges of lakes and ponds. Areas are oval or irregularly shaped and range from 3 to 200 acres. Slopes are smooth and slightly convex.

This unit is wetland that has potential for controlling floodwaters and erosion, improving habitat for wetland wildlife, and providing recreational opportunities.

This unit is very poorly suited for commercial wood production because of the high water table and organic material. Black spruce, balsam fir, tamarack, northern white cedar, and gray birches are common species on this unit, but growth is very slow and the trees are often stunted.

Western Parcel

BgB—Brayton fine sandy loam, 0 to 8% slopes, very stony

LaB—Lamoine silt loam, 3 to 8 percent slopes

LbB—Lamoine-Scantic complex, 0 to 8 percent slopes

LuC—Lyman-Tunbridge complex

TuC—Tunbridge-Lyman complex, 8 to 15 percent slopes

Ws —Wonsqueak and Bucksport mucks

BgB — Brayton fine sandy loam, 0 to 8% slopes, very stony

This very deep, nearly level to gently sloping, poorly drained soil is on glacial till uplands. It is in depressions, along drainage ways and at the foot of slopes where it receives runoff from higher elevations. Slopes are smooth and concave.

The soil is poorly suited for woodland, but if used for this purpose it is best suited for softwood production. The main tree species are red spruce, balsam fir, and red maple. The main limitations of this soil are stones and boulders on the surface and the high water table. Equipment use is severely restricted on this soil.

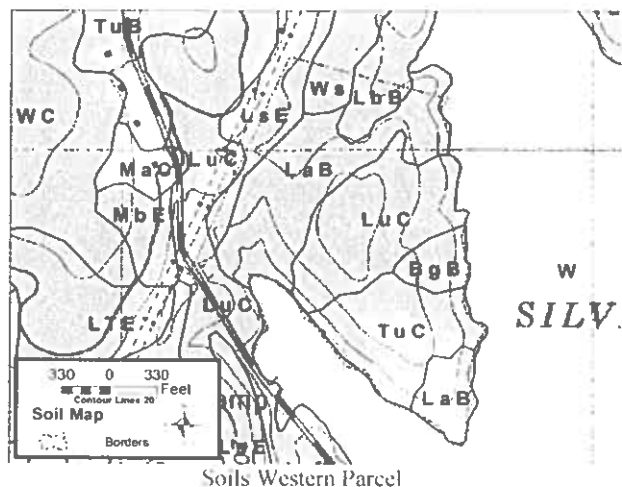
LaB — Lamoine silt loam, 3 to 8 percent slopes

This very deep, gently sloping, somewhat poorly drained soil is on coastal lowlands and in river valleys. Slopes are smooth and convex.

This soil is well suited for softwood production. The main tree species are red spruce, balsam fir, and red maple. The abundant natural reproduction of spruce and fir makes these soils well suited for pulpwood production. The main limitations of this unit are plant competition and the high water table. White pine will produce well on this soil, but requires considerable management to reduce competition from other species. Plant competition will restrict natural regeneration. Site preparation and weeding may be needed to reduce this competition. Windthrow hazard is severe on this unit because the seasonal high water table cause trees to be shallow rooted. Strip cutting or clearcutting will expose fewer trees to the wind and will help to prevent windthrow. Because of the high water table, harvesting operations should be restricted to the drier months or when the ground is frozen; equipment is easiest to use then and will cause the least damage to the site.

LbB — Lamoine-Scantic complex, 0 to 8 percent slopes

This very deep, nearly level to gently sloping unit is on coastal lowlands and in river valleys. The Lamoine soils are on small knolls, and the Scantic soils are in depressions. Slopes are smooth and slightly convex on the Lamoine soils and slightly concave on the Scantic soils.



This unit is fairly well suited for woodland and best suited for softwood production. The main tree species are red spruce, balsam fir, and red maple. The abundant reproduction of spruce and fir makes these soils well suited for pulpwood production. The main limitations of this unit are plant competition and the high water table. Plant competition is severe on this unit. Site preparation and weeding may be needed to suppress hardwoods. Equipment is difficult to operate on the wetter parts of the unit except during the drier parts of the year or when the ground is frozen.

LuC — Lyman-Tunbridge complex

This nearly level to rolling unit is on the crests and side slopes of upland glacial till ridges. Slopes are mainly convex. This unit consists 40 percent shallow, somewhat excessively drained Lyman soils; 35 % moderately deep, well drained Tunbridge soils; and 25 % other soils.

This unit is fairly well suited for softwood production. The main tree species are red spruce and balsam fir on Lyman soils. On the moderately deep Tunbridge soils and deeper inclusions, northern hardwoods are the main species. The abundant natural reproduction of spruce and fir makes this unit best suited for pulpwood production. The main limitations of this unit are plant competition and depth to bedrock. If this unit is managed for softwoods, competition from hardwoods must be controlled.

TUC — Tunbridge-Lyman complex, 8 to 15 percent slopes

This strongly sloping unit is on the side slopes of upland glacial till ridges. Slopes are mainly smooth and convex, but a few areas are complex.

This unit is fairly well suited for woodland. The moderately deep Tunbridge soils are best suited for hardwood production. The shallow Lyman soils are best suited for softwood production. The main tree species are hardwoods on Tunbridge soils and shade-tolerant softwoods on Lyman soils. If this unit is managed for softwood production, the deeper Tunbridge soils will require considerable management to reduce competition from hardwoods. Both soils have abundant production, especially of spruce and fir. The limitations of this unit are droughtiness and depth to bedrock. Seedling mortality is moderate on the Lyman soils because of droughtiness. Windthrow hazard is severe on the Lyman soils because the low depth to bedrock cause trees to be shallow rooted. Strip cutting or clearcutting will reduce the windthrow damage.

Ws — Wonsqueak and Bucksport mucks

This level to nearly level unit is in depressions in glacial ground moraine and glaciofluvial deposits and along the edges of lakes and ponds.

This unit is wetland that has potential for controlling floodwaters and erosion, improving habitat for wetland wildlife, and providing recreational opportunities.



These are well growing sites and even so harvested in the last 15 years there are still some great looking trees left

This unit is very poorly suited for commercial wood production because of the high water table and organic material. Black spruce, balsam fir, tamarack, northern white cedar, and gray birches are common species on this unit, but growth is very slow and the trees are often stunted.

Legal Restriction Affecting Forestry

There are five state laws you must keep in mind when conducting wood harvesting operations in Maine's organized municipalities¹²:

1. The Protection and Improvement of Waters Law.
2. The Erosion and Sedimentation Control Law.
3. The Natural Resources Protection Act (NRPA) and its associated regulations.
4. The Shoreland Zoning Act (SZA) and corresponding local ordinances.
5. The Forest Practices Act (FPA) and its associated regulations.

The *Waters Law* requires that a harvesting operation must avoid discharging soil material or any harvest debris into any water body. The best way to comply with the law is to make sure erosion control measures (Best Management Practices¹³) are followed.

The *Erosion and Sedimentation Control Law* is similar to the Water Law, and prevents unreasonable erosion of soil or sediment beyond the project site or into a lake, stream, river, wetland, or coastal water. The law further requires that erosion control measures be in place before an activity begins, be maintained, and remain in place and functional until the site is permanently stabilized.

The *NRPA* regulates work in, on, over, and adjacent to lakes, ponds, rivers, streams, brooks, tidal areas, and freshwater wetlands, as well as work in Mountain areas above 2,700 feet in elevation. Activities regulated under the NRPA include disturbing soil, placing fill and building permanent structures in, on, over or adjacent to these areas. The law is designed to protect these natural resources and is administered and enforced by the Department of Environmental Protection.



Drinking water for Bucksport

The *Shoreland Zoning Law* was enacted by the legislature in the early 1970s as a way to prevent damage to the natural beauty and habitat provided by lakes, ponds, rivers, tidal areas, non-forested freshwater wetlands and streams. The law targets development along the immediate shoreline of these resources and requires towns to enact a shoreland zoning ordinance at least as stringent as a model ordinance developed by the state. The ordinance must apply to all areas within 250 feet of lakes, ponds, rivers, tidal areas and freshwater wetlands at least 75 feet from certain streams. These areas make up the *shoreland zone*.

¹² A Field Guide to Laws Pertaining to Timber Harvesting in Organized Areas of Maine.

¹³ See section on BMPs and the BMP Forest Service Brochure in the pouch of the binder

Forest Practices Act

In 1989, the Maine Legislature passed L.D. 429 "An Act to Implement Sound Forest Practices." Known more commonly as the Forest Practices Act, the law has several different components. The component that requires you to comply with notification requirements and rules developed by the Maine Forest Service is summarized below.

A form "*Notification of Intent to Harvest Forest Products*" must be filed with the Maine Forest Service, prior to any harvest activity.

After a sale of forest products, a landowner must submit a report to the director of the Maine Forest Service using a form that is sent to the landowner from the Forest Service at the end of the year.

In addition to all these laws rules and regulation, brush, limbs, and tops should be removed a distance of 50 feet or greater from the shoulder of public roads, and 25 feet or greater from property and power lines.

Property lines have to be clearly marked within 250 feet of a harvest or thinning operation.

Aesthetic Considerations

A quick reminder about aesthetics of natural phenomena might be helpful.

Not everything that is dead or dying is ugly and unwanted. Especially large dead and dying trees, whether still standing or lying on the ground, provide essential living space and food for a great number of animals and plants. There is also a lot of hidden beauty and genuine majesty in a large old log lying on the ground. It is fascinating and informative to see a trunk slowly rotting away through years and decades of exposure to the elements and gradually providing living space and nutrition to the next generation of forest inhabitants. We only need to soften our bias to appreciate the beauty of this important natural process.



Beauty also can be in the small things

On the other side of the spectrum is a "perfect" tree resistant to insect attack and disease infection that looks very much like a vigorously growing, straight, and symmetrical veneer quality tree of highest economic value. In a natural setting, these are the trees dominating the forest, over-towering and outliving all the other trees in the vicinity. Three, four, or even five feet diameter trunk, 150+ feet high and 400+ years old, these trees command respect. Unfortunately, our economic environment makes it extremely expensive and therefore difficult to grow these giants.

There are also trees with "character". These are trees that have been damaged during their life, and consequently healed and overgrew their wounds. These are the trees fairy tales are made of. Faces, little gnomes, trolls, and elves, and all kinds of awkward looking creatures live in these trees, if you look for them in the malformed shapes and structure of trunk and branches.

However, a forest only composed of “perfect” veneer trees standing like foot soldiers in rank and file, or only composed of “character” trees pointing to some problem in the development of the stand, or only containing dead and dying trees showing neglect and carelessness, such a forest would not fulfill aesthetic requirements. Variety is also key to beauty.

Moreover, beauty misses out if it cannot be seen. An impressive tree in the midst of countless neighbors loses its uniqueness. Stands should be not too dense to show their beauty.

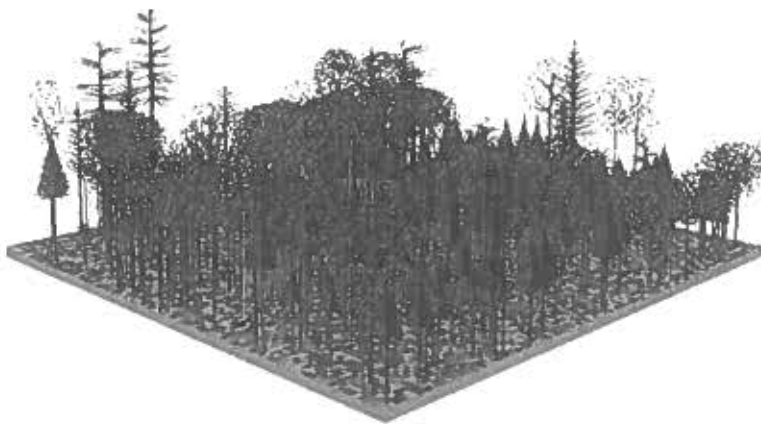
After a clear-cut, major blowdown, or when a field reverts to forest, nature often responds with an overabundance of seedlings. One seedling per square foot is common. This makes 43,560 trees per acre. A mature stand often has no more than 200 to 400 trees per acre. This means that of the original 43,560 tree more than 43,000 trees! have to die mostly within the first 20 to 50 years. Trees stocked too densely first slow down in their growth, and then lose their vigor until they are dead.

A well-thinned stand, in contrast, does not only develop much faster, but individual trees grow bigger, stronger, older, more valuable, and more beautiful. These ‘free to grow’ trees also provide more and better seeds, cones, and fruits — what is generally called mast — for all kind of animals to feast on. An abundance of many different kind of animals also makes for the aesthetic appeal of the land. In addition, a good and plentiful mast often is essential to get the next generation of trees started.

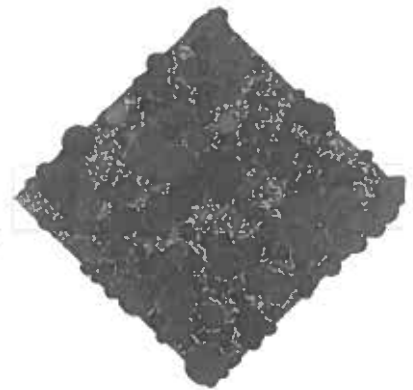


Stand Descriptions

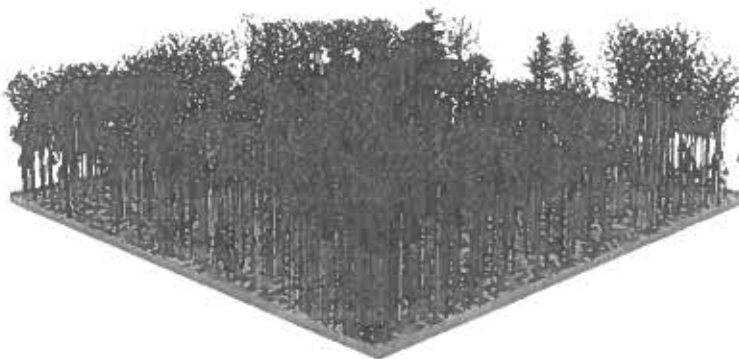
Two separate parcels make up the Town Forest. Some of the recommended management actions are similar for both parcels but the physical distance between the parcels suggests treating them as two distinct management units. Aesthetic considerations are very important in the management of both parcels. Economic considerations are important for both parcels in so far as forest management should be self-sustaining. Both parcels should be easily capable to pay management cost from stumpage income.



Western Parcel image - representation of actual cruising data (44 plots)
Perspective view, overhead view and frontal view



Frontal view shows all trees in the red area of the overhead view above

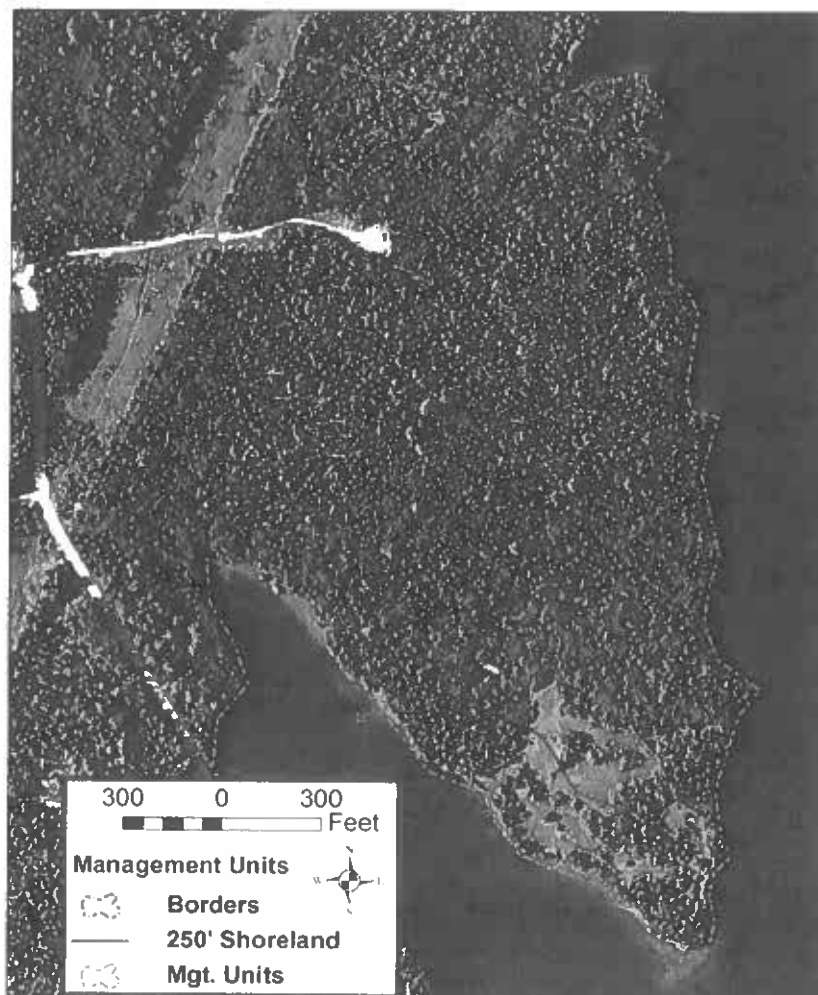


Eastern Parcel image - representation of actual cruising data (33 plots)



The images above show clearly the different character of the 2 parcels. The eastern parcel is more advanced in the succession of a forest towards old-growth showing a more multi aged structure while the western parcel seems to be simpler, more one-layered. The western parcel still has structural diversity with small open areas (ski roads) and a diverse canopy height.

I recommend starting the management on the western parcel at the public landing side of the lake, because the last harvest, about a decade ago, left the stands in worse shape than on the



eastern parcel behind the town garage. On the western parcel it is much easier to improve aesthetics, growth, and forest health in general. Lessons learned in the treatment of the western parcel then can be applied to the management on the eastern parcel.

Western Parcel at Public Landing

Five management units make up the western parcel.

1. Along the northern edge of the parcel is a forested wetland which shall be designated as forever wild. No active management is planned for this unit. Trees are mostly balsam fir, red maple, cedar, and brown ash. The trees are small, maybe up to 40' tall and up to 9 or 10 inches in DBH. The wetland is part of a larger wetland extending north over the

property border.

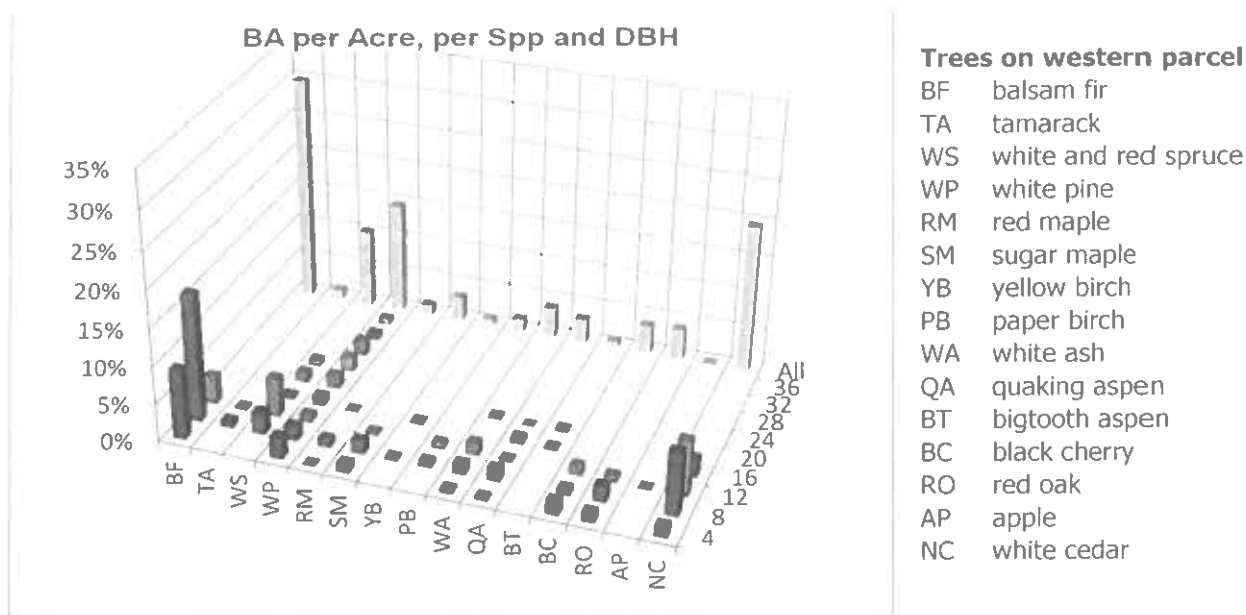
2. Along the 250' shoreland zone, management is restricted to the removal of 40% of the basal area and of openings not to exceed 100' X 100'. Because of the restriction, more large trees still grow in this section. Large pine, spruce, and cedar contribute most to the largest trees in this section.

A variance may be needed from the code enforcement officer of Bucksport to create the openings along the water's edge for the sled and toboggan slide.

3. All big trees, that is all trees with a DBH of more than 16". A number of large trees, are scattered in all areas of the parcel. Trees with a diameter of more than 16 inches should be considered as legacy trees. Legacy trees are trees which will not be harvested but will act as wildlife trees, old trees covered with moss and lichens, and big trees with the potential of big cavities when old and deteriorating. Big trees can be harvested when competing with other big trees for growing space, or as a source of income when there are sufficient other big trees in the section.
4. The rest of the forested part of the parcel. This is a fairly uniform forest with softwoods dominating in most parts of the parcel. It is a fairly diverse forest with 15 dif-

ferent trees species growing. Balsam fir contribute the largest amount followed by white cedar, white pine and red and white spruce. I did not distinguish red and white spruce as spruces can be deceptive as to being red or white.

5. The field and the trees starting to encroach onto the field. Many of the trees growing at the edge of the field are badly weeviled white pines with no economic value.



Eastern

Parcel behind Town Garage

Similar to the western parcel, the eastern parcel also has 5 management units.

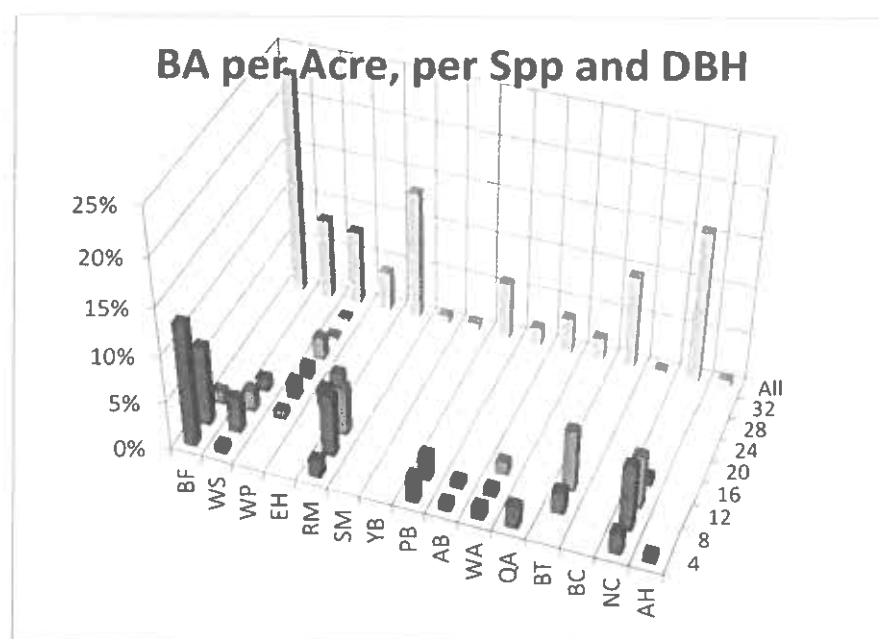
1. The small very poorly drained peninsula at the middle of the western border. Most of the trees there are of low economic value. A number of apple trees there have high ecological value and are worth pruning and releasing from competition.

2. Along the 250' shoreland zone, management is restricted to the removal of 40% of the basal area and of openings not to exceed 100' X 100'. A nice path is following the shoreline and this area has high potential for great viewsheds. This area has highest recreational value, areal.

3. All big trees, that is all trees with a DBH of more than 16". Big trees on this parcel are more concentrated along the eastern border. A

beautiful hemlock stand with large hemlock and a few large white pines is in the north eastern corner of the parcel.

4. The rest of the forested part of the parcel. Softwood is also dominating the eastern parcel, but there is a larger percentage of hardwoods growing in this tract especially at the center of the forested part. Largest component of the wood is balsam fir, followed by white cedar. Red maple, bigtooth aspen, and paper birch also contribute a significant portion to the
5. The field is the entry sign to this tract of the Bucksport forest and has already a very



Trees on eastern parcel

BF	balsam fir
WS	white and red spruce
WP	white pine
EH	hemlock
RM	red maple
SM	sugar maple
YB	yellow birch
PB	paper birch
AB	beech
WA	white ash
QA	quaking aspen
BT	bigtooth aspen
BC	black cherry
NC	white cedar
AH	apple

inviting setup with the planted trees and shrubs with identification signs along the driveway. A small parking lot is at the end of the field.

Overview of Management

Western Parcel at Public Boat Landing

No active management should occur in the forested wetland along the northern border. Trees and other vegetation should be left to grow and compete for growing space without human intervention. A walking path may lead close to the outside of the wetland for visitors to observe the plants and wildlife activities, but otherwise this should be a forever wild area.

The meadow on the southern tip of the parcel should be mowed periodically to exclude trees from growing there. The weeviled pine at the edge of the field should be cut to regain the area that was lost to the trees in past years. It may look very beautiful to plant a few flowering native shrubs along the edges of the field to enhance the viewshed and to provide additional food for wildlife. Native shrubs could be selected which bloom at different times a year, starting in spring and ending in fall. This would provide some colorful focal points throughout the growing season and into the fall. The following table of native shrubs gives some idea about the advantages and benefits of particular plants.

At the shoreline the trees should be thinned for better view over the lake and to create a safe sledding area. **The Bucksport code enforcement officer has to be involved with this pro-**

ject because this area is governed by shoreland zoning laws and variances may have to be obtained.

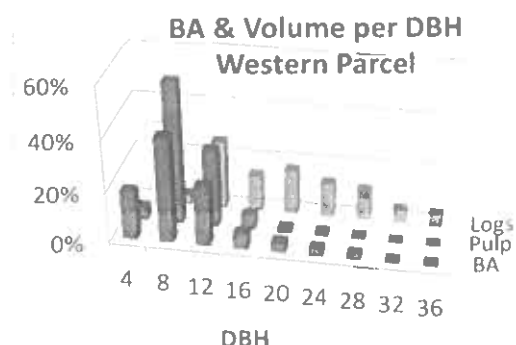
The forested area should be thinned. A harvest plan needs to be developed detailing the specifics of the harvest. The specifics of a par-

Sun Exposure
F = Full Sun
P = Part Sun
S = Shade

Soil Moisture
W = Wet
A = Average
D = Dry

Common Name	Scientific Name	Sun	Moist.	Ht.	Comments
Downy Serviceberry	<i>Amelanchier arborea</i>	F-P	A	25'	Edible/wildlife landscapes; orange fall color
Shadblow Serviceberry	<i>Amelanchier canadensis</i>	F-P	A	20'	Edible/wildlife landscapes; yellow/gold fall color
Alleghany Serviceberry	<i>Amelanchier laevis</i>	F-P	A	25'	Edible/wildlife landscapes; spring leaves bronze
Bog Rosemary	<i>Andromeda polifolia</i>	F-P	W	1'	Evergreen leaves; requires moist acidic soil
Black Chokeberry	<i>Aronia melanocarpa</i>	F-P	W-A	6'	Tolerates wet or dry soils; wine-red fall color
Buttonbush	<i>Cephalanthus occidentalis</i>	F	W	6'	Good for wetland plantings
Sweetfern	<i>Comptonia peregrina</i>	F-P	A-D	3'	Aromatic foliage; good in dry and sandy soil
Gray Dogwood	<i>Cornus racemosa</i>	F-S	A	15'	Suckering; white fall fruits eaten by many birds
Redosier Dogwood	<i>Cornus sericea</i>	F	W-A	6'	Red stems attractive in winter; tolerates wet soil
American Filbert	<i>Corylus americana</i>	F-P	A	15'	Wildlife eats fruit; tolerates alkaline soil
Leatherwood	<i>Dirca palustris</i>	S	A	4'	Yellow fall color; thrives in moist, shady sites
Common Witchhazel	<i>Hamamelis virginiana</i>	F-P	A	15'	Avoid drought; yellow flowers/leaves in fall
Winterberry	<i>Ilex verticillata</i>	F-P	W-A	10'	Bright red fruits persist into midwinter
Common Juniper	<i>Juniperus communis</i>	F	A-D	3'	Takes drought, wind, sterile or alkaline soils
Lambkill	<i>Kalmia angustifolia</i>	F-P	A	3'	Adaptable to many soils; best in acidic soil
Labrador Tea	<i>Ledum groenlandicum</i>	F-P	W-A	3'	Transplants well; good for moist-to-wet sites
Sweetgale	<i>Myrica gale</i>	F	A-D	4'	Bushy plant; dark green, aromatic foliage
Northern Bayberry	<i>Myrica pensylvanica</i>	F-P	A-D	6'	Good for massing; useful in poor soil sites
Bush Cinquefoil	<i>Potentilla fruticosa</i>	F	A-D	4'	Summer-flowering shrub; tolerates alkaline soil
Beach Plum	<i>Prunus maritima</i>	F	A	6'	Good for edible landscape; salt-tolerant
Chokecherry	<i>Prunus virginiana</i>	F	A	30'	White flowers in spring; wildlife food source
Rhodora	<i>Rhododendron canadense</i>	F-P	W-A	3'	Magenta flowers in spring; best in acidic soil
Staghorn Sumac	<i>Rhus typhina</i>	P	A-D	25'	Suckering; good mass plant for dry slopes
Meadow Rose	<i>Rosa blanda</i>	F	A	5'	Single light pink flowers; suckering plant
Carolina Rose	<i>Rosa carolina</i>	F	A	5'	Pink single flowers midsummer
Virginia Rose	<i>Rosa virginiana</i>	F	A	5'	Good in dry & seaside landscape; good barrier
American Elder	<i>Sambucus canadensis</i>	F	A	12'	Edible landscapes; tolerates alkaline soil
Scarlet Elder	<i>Sambucus pubens</i>	F	A	20'	Flowers in July; red fruit mid-summer
Canadian Yew	<i>Taxus canadensis</i>	P-S	A	6'	Hardest yew; good for shady landscape
Highbush Blueberry	<i>Vaccinium corymbosum</i>	F	A	8'	Edible/wildlife landscapes; best in acidic soil
Mapleleaf Viburnum	<i>Viburnum acerifolium</i>	P-S	A	6'	Good for mass plantings in shady sites
Hobblebush	<i>Viburnum alnifolium</i>	P-S	A	8'	Open shrub; good for naturalized landscape
Arrowwood Viburnum	<i>Viburnum dentatum</i>	F-P	A	15'	Durable; good hedge; tolerates alkaline soil
Nannyberry	<i>Viburnum lentago</i>	F-P	A	15'	Good for wildlife and naturalized landscapes
Highbush Cranberry	<i>V. opulus var. trilobum</i>	F-P	A	12'	Use for screening; good for wildlife landscapes

ticular harvest go beyond this management plan. In general, the thinning should accomplish the following tasks.



Spacing of trees: a simple, easy to remember rule of thumb states that the distance between two adjacent trees in feet should be no less than the sum of the DBH of the same trees in inches. This means a 5" and a 10" tree should be a minimum of 15' apart. This spacing can be achieved in one thinning operation when dealing with windfirm trees. For trees and stands where blowdowns are a problem, it may take several thinning operations to achieve the desired result. In some instances:

group selection cuts may be a better option when dealing with fragile stands that easily blow over. Another objective in the management of the western parcel is to encourage regeneration where no young trees are present and to provide light to established regeneration. About 40% to 60% canopy closure of the overstory trees is desirable. This means during a sunny day about half the time the sun should be blocked from reaching the vegetation on the ground.

Western Parcel per acre				Total volume on 70 ac	
DBH	BA	Pulp cords	BdFt MBF	Pulp cords	BdFt MBF
4	22.7	0.62	0	43.7	0
8	48.5	6.43	0.18	450	12.6
12	27.6	3.49	1.14	245	79.9
16	7.1	0.65	0.61	45.5	42.7
20	4.4	0.2	0.75	13.7	52.6
24	3.4	0.15	0.58	10.8	40.4
28	2.4	0.09	0.51	6.51	35.6
32	1	0.02	0.22	1.65	15.4
36	1	0.03	0.2	1.89	14.3
60	0.5	0.01	0.12	0.99	8.06
All	119	11.7	4.31	819	301

Large white pine and other large, windfirm trees (hardwoods, tamarack) should be released from competition. Cut all trees growing into the crown area of these large trees. Large trees are impressive and people should be able to see them in all their glory. Large trees of other softwood species need to be checked for wind firmness. If they will not survive the next 10 to 15 year (next cutting cycle) they should be cut.

A number of apple trees are growing in the areas adjacent to the meadow. The trees should be pruned like and all dead branches removed. This

will revitalize the trees and increase mast production.

Eastern Parcel behind Town Garage

The management objectives are similar to the objectives for the western parcel. One small difference is that no section of this parcel should receive a forever wild designation. All areas may be actively managed. Still, overall goal is to transform the forested part into a forest resembling old-growth. To speed up the transformation the parcel should be thinned. Especially the dense exclusion stage¹⁴ sections should be thinned and thereby transformed into sections of re-initiation stage forest.

Eastern Parcel per acre				Total volume on 52 ac	
DBH	BA	Pulp cords	Logs MBF	Pulp cords	Logs MBF
4	42.9	0.72		37.50	0.00
8	51.4	7.49	0.14	389.51	7.14
12	38.6	6.66	1.38	346.44	71.96
16	10	0.66	1.10	34.26	57.27
20	4.3	0.22	0.62	11.20	32.17
24	4.3	0.18	0.72	9.54	37.59
28	0.7	0.02	0.12	1.22	6.07
32	0.7	0.02	0.13	1.10	6.99
All	152.9	15.98	4.22	830.84	219.19

Objectives for the thinning are also to space the individual trees for optimal growth and to allow enough sunlight into the understory to ensure a healthy development of young growth.

Because of the steeper slope towards the water than on the western parcel, the shoreland zone (250' from the water's edge) should closely be scrutinized for viewsheds over the lake. Prudent thinning practices will be able to distribute the remaining trees in a way as to create some great views over the lake. Care has to be taken here not to violate the shoreland zoning law that limits the harvest within the 250' zone to no more than 40% of the basal area and opening of less than 10,000 square feet.

A fair amount of slash mostly from collapsing fir trees covers the ground especially in the southern part of the forested area. Some dead and dying trees still hang in neighboring trees, unable to fall all the way to the ground. The leaners should be cut all the way to the ground, and the slash on the ground should be cut low, or if financially feasible piled into brushpiles thereby creating valuable wildlife habitat. There may be some opportunities for community work.

¹⁴ Exclusion stage is the second stage of forest succession with initiation stage, exclusion stage, re-initiation stage and old growth being the four stages of the model.

Field methods

For the inventory of the property, I took 77 variable prism plots¹⁵ on the two parcels. Forty three plots were taken on the western parcel and 34 plots on the eastern parcel. On these 77 plots I identified, measured, and recorded 524 trees. The error for the mean Basal Area for all plots on the property on the 90% confidence level was 15% for the western parcel and 11% for the eastern parcel.

Volume and Stumpage Prices

The stumpage prices from 2010 to the right are published by the Maine Forest Service using the figures from the harvest reports that have to be filed for all harvests in Maine. #Rpts are the number of reports each of the figures is based on.

Too many variables play into a stumpage sale to come up with an exact figure on the amount of stumpage that may be paid for a thinning. Estimates can be obtained by looking at the using tables and graphs on the previous pages to calculate the stumpage value for different scenarios.

Best Management Practices (BMP)

Best Management Practices is a brochure with guidelines for the reduction of erosion and sedimentation of water bodies (streams, ponds, lakes, rivers, wetlands etc) from logging activities. The Maine Forest Service Policy and Management Division developed these guidelines with the assistance of FORAT (Forestry Advisory Team), an advisory group with broad representation from Maine's forestry community.

The brochure explaining all necessary BMP procedures and guidelines is included with the plan. It is the logger's, operators, and forester's obligation to follow these guidelines. Land-owners also need to be aware of the BMPs for they have the final responsibility that the guidelines are followed in all operations of the property.

Hancock County 2010 stumpage prices

<u>BIOMASS (per ton)</u>	<u>AVG</u>	<u>Min</u>	<u>Max</u>	<u># Rpts</u>	<u>2009 Avg</u>
All Species	\$2.99	\$0.50	\$6.00	33	\$2
<u>Boltwood (per MBF)</u>					
White Birch	\$123	\$35	\$200	20	\$129
Yellow Birch	\$95	\$70	\$128	6	No Price
<u>Firewood (per cord)</u>					
All Species	\$20	\$8	\$35	39	\$23
<u>PALLETWOOD (per MBI)</u>					
Hardwood	\$70	\$5	\$100	16	\$107
Softwood	\$65	\$12	\$75	10	\$62
<u>PULPWOOD (per ton)</u>					
Aspen/Poplar	\$12	\$3	\$18	27	\$5
Cedar	\$18	\$14	\$18	7	No Price
Hemlock	\$6	\$2	\$10	26	\$9
Mixed Hardwood	\$10	\$2	\$24	56	\$7
Spruce & Fir	\$12	\$2	\$30	85	\$13
White Pine	\$4	\$1	\$7	20	\$4
<u>SAWLOGS (per MBI)</u>					
Ash	\$130	\$25	\$201	18	\$145
Cedar	\$75	\$20	\$120	20	No Price
Hemlock	\$54	\$3	\$113	17	\$62
Red Oak	\$152	\$75	\$200	14	\$171
Red Pine	\$57	\$17	\$100	7	\$42
Red/White Maple	\$109	\$40	\$157	23	\$97
Spruce & Fir	\$122	\$60	\$180	54	\$122
Sugar Maple	\$192	\$45	\$227	18	\$114
White Birch	\$100	\$20	\$160	13	\$159
White Pine	\$175	\$20	\$350	46	\$162
Yellow Birch	\$182	\$50	\$289	20	\$177
<u>STUDWOOD (per ton)</u>					
Other Species	\$12	\$8	\$37	8	\$14
Spruce & Fir	\$23	\$5	\$37	22	\$19
<u>VENEER (per MBI)</u>					
Red Oak	\$523	\$240	\$825	5	No Price
Sugar Maple	\$743	\$564	\$910	6	No Price
White Birch	\$387	\$112	\$602	7	No Price
Yellow Birch	\$634	\$385	\$900	8	No Price

¹⁵ Variable prism plots are a recognized method to select specific trees for computation of stand statistics

